REMARKS

Claims 1, 5, 6, 12, 19, 20, and 21 are pending in this application. By this Amendment, claims 1, 6, 19, and 20 are amended. Claims 1, 5, 6, 12, 19, 20, and 21 are now pending in this application. Claims 15-18 are withdrawn from consideration as being directed to a non-elected invention.

The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Rejection of Claims under 35 U.S.C. §103

A. Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Takehiro (JP 2001-358086) in view of Yoshikawa (JP 11-340155).

To expedite prosecution, independent claim 1 is amended to delineate, *inter alia*:

> ...
> a thickness of the supporting portion is not less than 3 mm and not more than 10 mm ...

Even if the supporting portion is formed from a silicon plate-like member, if the thickness of the supporting portion is equal to the thickness of the substrate, it would be insufficient in a point of preventing slip dislocation because of occurrence of the slip line (see page 4 of Applicants' application). To solve this problem, it is necessary that the diameter of the supporting portion be smaller than the diameter of the substrate (i.e., the supporting portion supports the substrate and is not in contact with a periphery of the substrate) and the thickness of the supporting portion is at least twice the thickness of the substrate, or more preferably, no less than 3 mm and not more than 10 mm (see pages 17 and 18 of Applicants' application).

With the supporting portion having the thickness recited in independent claim 1, the slip occurring in the substrate can be prevented. Further, the rigidity of the supporting

portion can be greatly increased, and deformation of the supporting portion resulting from the temperature change can be suppressed when the supporting portion formed from a silicon plate-like member has a thickness of not less than 3 mm and not more than 10 mm, as recited in claim 1.

Takehiro discloses using a silicon wafer 10 on a support plate 11 for placement of the silicon monocrystal wafer undergoing heat treatment. Wafer 10 has a smaller diameter than the silicon monocrystal wafer undergoing heat treatment. The reference also discloses using a wafer-shaped or ring-shaped support plate 13 having a concentric convex part 12 at the center instead of the silicon wafer 10 and support plate 11.

However, the silicon wafer 10 and the support plate 13 of Takehiro are different from the supporting portion recited in claim 1 in both thickness and material. More specifically, it is believed that the thickness of the silicon wafer 10 for placement is equal to the silicon monocrystal wafer undergoing heat treatment. Further, the thickness of a concentric convex part 12 of the support plate 13 is 1 mm (described in paragraph [0026] of Takehiro), and the support plate 13 (a concentric convex part 12) is not formed from Si, but from SiC.

Clearly, Takehiro neither discloses nor suggests that the thickness of the silicon wafer 10 for placement and the support plate 13 is not less than 3 mm and not more than 10 mm. Further, the arrangement disclosed in Takehiro cannot increase the rigidness of the supporting portion itself and cannot suppress deformation of the supporting portion against the temperature change.

Yoshikawa discloses a substrate support 2 having a thickness of 0.8-1.25 mm or 1.23-1.95 mm. However, the substrate support 2 of Yoshikawa is formed from a thin plate-like body which supports the whole one surface and is different from the supporting portion supporting the substrate, as recited in claims 1, 6, 19, and 20, which is not in contact with a periphery of the substrate. More specifically, the substrate support 2 of Yoshikawa is in

contact with a periphery of the substrate. Yoshikawa also neither discloses nor suggests that the thickness of the substrate support 2 is not less than 3 mm and not more than 10 mm.

As shown in Fig. 3 of Yoshikawa, the substrate support 2 supports the whole one surface of the substrate while deforming the substrate support. This is different from the supporting portion disclosed in Applicants' application which supports the substrate while suppressing the deformation of the supporting portion. The arrangement of the substrate support 2 of Yoshikawa cannot increase the rigidness of the supporting portion itself and cannot suppress deformation of the supporting portion against temperature change.

The support plate of Takehiro supports a center portion of the substrate while substrate support 2 of Yoshikawa supports the whole one surface of the wafer. Therefore, even if the teaching of Yoshikawa were somehow combined with the arrangement of Takehiro, the arrangement recited in claim 1 does not result.

In view of the above, the features recited in claim 1 are not disclosed in, and would have not been obvious over Takehiro and Yoshikawa, considered alone or in combination. Therefore, claim 1 is patentable over Takehiro and Yoshikawa.

B. Claims 5, 6, 12, and 19-21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Takehiro in view of Yoshikawa, as applied to claim 1, and further in view of Satoshi (JP 10-242254).

To expedite prosecution, independent claims 6, 19, and 20 are amended to recite subject matter similar to that recited in independent claim 1 (i.e., a thickness of the supporting portion is not less than 3 mm and not more than 10 mm). Therefore, independent claims 6, 19, and 20 are patentable over Takehiro and Yoshikawa for reasons that are similar to why independent claim 1 is patentable over Takehiro and Yoshikawa.

In addition, according to claims 6, 19, and 20, adhesion between the substrate and the supporting portion by heat-treatment can be prevented (see page 8 of Applicants' application).

Further, according to claims 19 and 20, the substrate is not flawed and the occurrence of the slip can be prevented (see page 19 of Applicants' application).

Satoshi discloses preventing a jig, for retaining a silicon wafer, from being thinned down (etched) by dry cleaning gas by providing a silicon dioxide film on the surface of the jig body, which is made of silicon carbide. Thus, while the surface of the jig body of Satoshi, which is made of silicon carbide, is coated with a silicon dioxide film, claim 6 delineates that a substrate-placing face of a silicon plate-like member is coated with a film comprising one or a plural number of materials including silicon carbide, silicon nitride, polycrystalline silicon, silicon oxide, glassy carbon, and microcrystalline diamond. Further, while the surface of the jig body of Satoshi, which is made of silicon carbide, is coated with the silicon dioxide film, claims 19 and 20 delineate that a substrate-placing face of a silicon plate-like member is coated with an amorphous silicon oxide film. Therefore, the features recited in independent claims 6, 19, and 20 are different from what is disclosed in Satoshi.

Satoshi discloses that the coated layer 14 is a silicon dioxide film formed on the surface of the jig body made of silicon carbide, and not a substrate. It is clear that the coated layer 14 is a layer formed on the surface of the jig body and is not the substrate because the thickness of the coated layer 14 is not less than 100Å and not more than 100μm. Further, the substrate is supported with the jig, and not formed on the surface of the jig body. Even if the coated layer 14 were presumed to be a substrate, Satoshi is different from the composition recited in the claims because the base of the coated layer 14 is the surface of the jig body made of silicon carbide. In addition, the jig body made of silicon carbide impregnated with Si is not a jig body made of silicon, but a jig body made of silicon carbide. Therefore, even if the coated layer 14 were presumed to be a substrate, Satoshi merely discloses that SiC film 12 is coated on the surface of the jig body made silicon carbide impregnated with Si, and does not disclose that SiC film 12 is coated on the surface of a jig body made of silicon.

Further, if the arrangement of Takehiro were combined with the teaching of Satoshi, a structure coated with a silicon dioxide film on the surface of support plate 13 made of silicon carbide would result. A substrate-placing face of the supporting portion coated with a film or films comprising one or more materials including silicon carbide, silicon nitride, polycrystalline silicon, silicon oxide, glassy carbon, and microcrystalline diamond, as recited in independent claim 6, does not result if the arrangement of Takehiro were combined with the teaching of Satoshi. Nor does a substrate-placing face of the supporting portion coated with an amorphous silicon oxide film, as recited in independent claims 19 and 20, result if the arrangement of Takehiro were combined with the teaching of Satoshi.

Still further, if the arrangement of Yoshikawa were combined with the teaching of Satoshi, a main body of vertical mold boat 3 would need to be made of silicon carbide and covered with a silicon dioxide film, as Satoshi discloses coating the surface of the ***jig body*** made of silicon carbide with a silicon dioxide film. Satoshi does not disclose a substrate-placing face of a silicon plate-like member, on which the substrate is placed, is coated with an amorphous silicon oxide film, as recited in independent claims 19 and 20.

It should also be noted that Yoshikawa discloses that the substrate support 2, formed of sintered polycrystalline silicon, has a gettering-effect for metallic impurities. However, if a surface of the substrate support 2, formed of sintered polycrystalline silicon, were coated with a silicon dioxide film, as suggested in the Office Action, ***the gettering-effect does not occur*** because the surface of the substrate 2 is covered with the silicon dioxide film. In other words, it becomes impossible to solve the problem of metallic pollution, disclosed in Yoshikawa, when the silicon dioxide film of Satoshi is applied to the substrate support 2 of Yoshikawa, which is formed of sintered polycrystalline silicon. More specifically, a disclosed objective of Yoshikawa (addressing metallic pollution of the semiconductor wafer

via ***the gettering-effect***) does not result if Yoshikawa were modified as suggested in the Office Action.

It is well settled that one having ordinary skill in the art can **not** be considered realistically motivated to modify a reference in a manner inconsistent with the disclosed objective. ***In re Fritch,*** 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992); ***In re Gordon,*** 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

In view of the above, the features recited in independent claims 6, 19, and 20 are not disclosed in, and would not have been obvious over Takehiro, Yoshikawa, and Satoshi, considered alone or in combination. Therefore, independent claims 6, 19, and 20 are patentable over Takehiro, Yoshikawa, and Satoshi.

C. Because claims 5, 12, and 21 depend from independent claims 1, 6, and 20, respectively, they are patentable over Takehiro, Yoshikawa, and Satoshi for at least the reasons discussed above, as well as for the additional features they recite. Therefore, reconsideration of the rejections and allowance of claims 1, 5, 6, 12, and 19-21 are respectfully solicited.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below

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